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CROP TALK

OMAFRA Field Crop Specialists — Your Crop Info Source

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Fall Pasture Management Following a Dry Summer

by Jack Kyle, Grazier Specialist, OMAFRA

The summer of 2007 has been one of the driest on record in many parts of Ontario and pastures are showing the impact! There are a number of steps to consider this fall and next spring to bring pastures back into top form.

Reduce Tramping

Allowing pasture re-growth this fall will result in a more vigorous stand next spring. Sacrifice a small pasture and feed in this area rather than letting the livestock roam across the entire pasture. Once moisture levels return, and the grass starts to re-grow, give pastures a chance to develop before allowing livestock to graze. The plants need time to grow new root and leaf material and re-build root reserves, to replace what was damaged during the dry weather.

If feeding green-chopped forage, be aware that nitrate levels may be high in drought-stressed corn or sorghum, that could be deadly to livestock. Refer to "*Drought Damaged* Corn Silage" on the OMAFRA Website at www.omafra.gov.on.ca/english/crops/facts/drought.htm.

Stubble Fields

Don't under-estimate the amount of forage available in a grain stubble field. As well as the stubble and chaff left behind, grain that went out the back of the combine, missed

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grain heads and grass weeds will all provide feed. There will be between a few days to a few weeks of feed in these cereal fields. Soybean stubble fields are another option. This emergency feed can be supplemented with hay or other feed to complete the ration.

Annual Forage
If sufficient growing season remains and soil moisture is adequate, consider an annual forage. Fall rye grows well into the fall, and greens up early in the spring. Depending on the length of growing season remaining, oats, rape or stubble turnips might be considered. These crops are best sown in early- to mid-August.

Fertilizer
Nitrogen fertilizer applied to a grass-based pasture during the early fall will encourage growth and help to rejuvenate the grass. 50 to 70 pounds of actual nitrogen should be applied. Expect 20 to 30 pounds of dry matter production from each pound of nitrogen applied. Fall application will increase the sugar levels in the grasses, and enable more vigor next spring.

To establish new legumes in a pasture, the best method may be to apply phosphorous and potash this fall, and then frost seed late in the winter or early next spring with trefoil or clover. The legume seedlings will need a reasonable level of fertility to get properly established, and the weakened grasses will be less competitive.

For more information, refer to "Looking for Extra Forage", "Conserving Pasture Production During Dry Conditions" and "Fall Pasture Fertility Management After A Drought" on the OMAFRA Forage Website at www.omafra.gov.on.ca/english/crops/field/forages.html.

Grazing Mentorship Program

by Jack Kyle, Grazier Specialist, OMAFRA

The Sustainable Grazing Mentorship Program is a consulting/mentoring program being delivered through Ontario Cattlemen's Association and funded by Greencover Canada. The Grazing Mentor program is open to beef producers in Ontario. The program helps connect experienced graziers (mentors) with novice producers to assist the less experienced in implementing Beneficial Management Practices in their grazing operation. A Grazing Mentor is a respected producer peer with extensive grazing management experience and knowledge. The Mentor can suggest grazing management options to help you improve your profits, your forage productivity and your land and water resources.

A Grazing Mentor from your area will come to your farm to discuss your grazing resources, opportunities and challenges. The Mentor can make suggestions about fencing, watering systems, grazing systems, plant growth, forage species, winter grazing options, or just about anything your have questions about!

The cost to the novice grazier is $100. The Mentor comes to the farm and assists the novice grazier with creating grazing plans, developing systems, and performing economic analysis of their enterprises. The mentor puts in approximately 16 hours (2 days) with the novice producer. To find out more, or to request a Mentor contact Paul Stiles, Ontario Cattlemen's Association 519-824-0334 or 1-866-370-2333.

How Many Soil Samples Do I Need?

by Keith Reid, Soil Fertility Specialist, OMAFRA

A perfect soil testing program would tell you exactly what nutrients you need to add to each part of your fields for optimum crop yields. This would account for all the variability in soil fertility that was naturally present in the soil as well as what we have imposed by our management. The reality is that we need to balance the cost of increasing precision against the value we can gain from this precision.

What does Nutrient Management require?
The nutrient management regulations specify that a single soil sample can't represent more than 10 hectares (25 acres). This is in line with the original field boundaries on many farms, and should capture much of the variability from past management. There is an option for including a larger area in a single sample, but this is only where the field has already been shown to be uniform.

Where will it pay to sample more intensively?
The risk with sampling large fields is the loss of

income from under-fertilizing responsive areas within the field, and over-fertilizing non-responsive areas. If there is going to be an advantage to intensive sampling, there has to a mix of responsive and non-responsive areas within the field, and they need to be arranged in such a way they can be measured, and managed. In low testing fields, the best investment is in fertilizer rather than in more precise testing. In high testing fields, the cost of intensive sampling to find the parts of the field that might be responsive to fertilizer will be larger than the value of any increased yield

Smart sampling: dividing field sections to get the most information

When you divide your fields, the data you need the most will help to guide how to draw the boundaries between sections. The following table will help to guide your decisions.

Soil Erosion Still a Threat to Our Soils

by Adam Hayes, Soil Management Specialist, OMAFRA

Erosion control structures, no-till and minimum tillage practices have significantly reduced soil erosion in the province. Streams have less sediment in them and eroded areas of fields have become more productive. Unfortunately soil erosion still occurs on a significant acreage. Climate change may provide further challenges as extreme weather events could increase soil loss by wind and water by up to 3 times the present soil loss.

The dry conditions this spring showed us that we must still protect our soils from wind erosion. There were several windy days where significant soil was lost, in extreme cases filling in ditches. Growth has been reduced in many fields this season reducing the amount of residue after harvest to protect the soil from water and wind until the next crop is planted. If tillage is to be carried out on these fields, care will have to be taken not to bury too much residue. If moisture and timing permits an inexpensive cover crop, it may provide added protection to the soil this fall.

Table 1 - Guide to Soil Sampling

Parameter	Dominant Influence	Sampling pattern
Soil pH	Natural – pH drops faster on sandy soils; knolls where subsoil exposed tend to be alkaline	Sample knolls separately from hollows, and divide fields according to texture.
P & K	Management – most of the variation is from past applications of manure and fertilizer	Divide fields according to previous field boundaries. If past fields not known, divide farm cross-wise rather than length-wise.
Organic Matter	Natural – finer textured soils tend to have more organic matter; erosion decreases organic matter	Sample knolls separately from hollows, and divide fields according to texture.
Nitrate-N	Natural – will generally follow the same pattern as organic matter	As for organic matter.
Micronutrients	Mixed	Soil pH will have a dominant impact on availability, but past management may have added significant quantities in some fields.

Table 1 lists symptoms of soil erosion and options to correct the problem. Watch for these symptoms and take action to reduce soil loss. Lost soil takes nutrients with it and hurts crop productivity.

For more information, refer to the Best Management Practices booklets "*Soil Management*", "*Field Crop Production*", "*No-till: Making it Work*" and "*Buffer Strips*".

Table 1 - Best Management Practices for Erosion Control

Type of Erosion and Symptoms	Best Management Practices
Water Erosion • Rills or cuts visible on soil surface after rain or snowmelt • Soil accumulated at bottom of slopes or depressional areas • Soil on knolls is lighter in colour, and stones may be visible on the hilltop • Crops buried with soil	• Use reduced tillage systems • Leave at least 30% crop residue on the soil surface after planting • Rotate row crops with solid seeded crops • Install erosion control structures where needed • Till and plant across the slope where possible
Wind Erosion • Soil accumulated on the leeward side of any barriers • Seeds or seedlings are exposed, moved, or buried • Stems and leaves have small pits or abrasions	• Rotate row crops with solid seeded crops • Maintain and build organic matter levels • Plant cover crops • Keep the soil surface rough • Plant windbreaks and use rye strips • Use strip cropping
Tillage Erosion • Soil on knolls/hillsides is lighter in colour and bare • Water erosion is worse than expected on hilltops eroded by tillage • Large amount of soil accumulated on lower slopes	• Till across the slope • Use reduced tillage systems • Keep eroded knolls and hilltops covered with vegetation • Reduce speed and tillage depth • Grow cover crops and/or add other organic sources to rehabilitate eroded knolls

Potash Deficiency in Soybeans

by Horst Bohner, Soybean Specialist, OMAFRA

Many soybean fields showed characteristic potash (K) deficiency this year. Potash is one of the most prevalent soybean nutrient deficiencies evident in the province. After nitrogen, K is the nutrient absorbed by soybean plants in the largest amount. A large portion of this K is stored in the seed, and therefore removed from the field each year at harvest. K deficiencies will severely cut soybean yield potential. K influences nodule formation, as well as the plant's ability to resist diseases.

Fall is an excellent time to apply K for next year's soybean fields. But not all fields that showed deficiency symptoms this year were truly soil deficient. What was going on in these fields? Regular soil testing is always recommended, but if K deficiency symptoms were evident a soil test is crucial to determine K soil levels.

Figure #1. Potassium (K) deficiency appears as yellowing or browning of leaf margins, generally on the older leaves.

Factors Affecting K Availability

Although there is considerable K in the soil, only 1 to 2% of the soil's potassium is readily available for the plant. About 10% is "slowly" available. A number of factors influence the uptake of K. These include:

1. Soil temperature - As temperatures increase the rate of diffusion and root growth also increases, making the potassium more available.
2. Soil compaction - Under poor aeration caused by soil compaction the low oxygen level in the soil decreases the uptake of the K. Roots cannot access as large a volume in compacted soils.
3. Dry conditions - When conditions are dry, the movement of the K in the soil to the root is slower. Low moisture also results in more of the K becoming fixed in unavailable forms.
4. Clay and Organic Matter - Soils that are low in clay or organic matter retain less K. Sandy soils may need more frequent applications of K than other soils.

Stress Induced Potash Deficiency

Factors that limit root growth, such as dry conditions, sidewall compaction, insects, and diseases, will reduce K uptake. Even if soil K levels are adequate, symptoms may be evident. This describes what happened in many fields in 2007. Because of the dry conditions, the roots were unable to take up K from the soil, even if soil K levels were sufficient. A soil test is the only reliable way to know if a field is truly low in K, or only showing stress-induced potash deficiencies.

Fertilizer Recommendations

Soil applied fertilizer at the recommended rate is the best way to ensure enough K will be available for next year's crop.

Leaf Samples

Fertilizer recommendations for soybeans are normally based on soil test results, but plant tissue analysis can provide useful additional information. There has been a recent update to the Critical Concentration for K in soybean tissue. Due to newer research the Critical Concentration of K has been revised upward from 1.2% to 2.0%, and the Maximum Normal Concentration from 2.5% to 3.0%. For more information on leaf samples, please refer to : www.omafra.gov.on.ca/english/crops/facts/soybean_analysis.htm.

Potash Recommendations for Soybeans Based on OMAFRA-Accredited Soil Tests

Ammonium Acetate Potassium Soil Test (ppm)	Rating	Potash (K_2O)[1] Required kg/ ha
0 - 15	Low	120
16 - 30	Low	110
31 - 45	Low	90
46 - 60	Low	80
61 - 80	Medium	60
81 - 100	Medium	40
101 - 120	Medium	30
121 - 150	High	0
151 - 250	Very High	0
251 +	Excessive[2]	0

2008 Corn-On-Corn Checklist

by Greg Stewart, Corn Specialist, OMAFRA

It's possible that a large percentage of your 2007 soybean ground will get planted to winter wheat this fall. There may also be economic pressure to plant additional spring wheat in some areas of the province on soybean ground. If corn prices rise over winter and attractive pricing options present themselves, some corn producers may plant corn on ground that grew grain corn in 2007. A few of the steps that will lead to profitable corn-on-corn production need to be taken now.

1. **Order the hybrid**.

It is very difficult to think there is any thing more important than getting the right hybrid for corn-on-corn. Bt-rootworm protection, herbicide tolerant, Bt-corn borer protection, seed-applied insecticide, good stalk strength, and of course high yields are the traits you need to get. Wait to order this hybrid in March when the price of corn gets you salivating and I'll bet you Peter Johnson's salary that you won't be able to get it.

2. **Identify potential fields with better drainage**.

Potential fields should be targeted where corn-on-corn has the greatest possibility for success. Ideally these may be some of your lighter textured

soils or better drained fields where corn roots that are struggling with the stresses of corn-on-corn conditions are not frequently contending with wet soil conditions as well.

3. **Identify potential fields where the 2007 corn crop was not herbicide tolerant.**
This will make controlling volunteer corn in 2008 with your herbicide tolerant hybrid a simple proposition.

4. **Consider fall tillage options and improvements.**
There are some good examples in Ontario of reduced tillage systems working for corn-after-corn. However, my confidence in recommending them is limited. Until we have proved them out further, I recommend fairly aggressive tillage systems. Ensure that your fall tillage operation gets done for corn-on-corn under excellent soil fracturing conditions. Focus on uniformity, both of soil disturbance and residue management. Deep tillage that leaves the soil rough and the residue poorly distributed (i.e. a poorly set up chisel plow) will be tougher to deal with and give poorer results than a good job of disc-ripping or mouldboard plowing.

5. **Planter set-up to remove trash.**
Planter set-up should include precision depth control like in any previous crop scenario, but if corn residues are on the soil surface it is critical to remove them with trash clearing devices from the row area ahead of the row unit openers.

6. **Nitrogen At Planting**
If you plan on sidedressing your nitrogen in June, be sure to meet the early N requirements at planting time. Normally we consider 30 lbs N/acre to be a good number for this early plant feeding. However, in a corn-on-corn scenario, where more of the soil nitrogen may be tied up in the decomposing corn stover, it may be advisable to boost this number by 50% (i.e. 45 lbs N/acre).

7. **Use the most economical N rate.**
Field parameters can be entered into the Ontario Corn N Calculator to help you ensure the most profitable nitrogen application rate for a corn-on-corn scenario. For example, in a 2,900 CHU area consider a field of corn-after-corn with 150 bu/acre yield potential, on a sandy loam soil, with a corn price of $4.50/bushel and nitrogen costs of $.50/lb. If you apply 45 lb N/acre at planting, how much additional N would you sidedress? (Answer: 97 lbs N/acre). What if all the N is applied as pre-plant urea and incorporated? (Answer: 152 lbs N/acre). Other factors that best describe your fields can be entered into the calculator at www.gocorn.net.

BMR Corn Silage

by Joel Bagg, Forage Specialist, OMAFRA, Lindsay

Brown mid-rib (BMR) corn silage has unique genetics providing lower lignin content and higher fibre digestibility (NDFD). This enables higher forage intakes and increased milk production in dairy cows. However, this improved livestock performance comes at the cost of lower silage yields per acre. So, where does BMR fit to its best advantage?

BMR gets its name from the "brown mid-rib" characteristic that makes it visually distinct. Four naturally occurring BMR genetic mutations have been discovered since the 1930's. The characteristic is not GMO. The mutation causes incomplete lignin formation. Plant breeders have taken this gene and incorporated it into modern corn genetics to commercialize silage-only hybrids. BMR corn silage is marketed in Ontario by Mycogen Seeds. The BMR characteristic is also found in sorghums.

Higher Intakes & Milk Production
Fibre levels (NDF) of BMR corn silage are similar to normal levels, but lignin is typically 25 - 35% lower. The lower lignin results in much higher fibre digestibility (NDFD). NDFD levels are typically 8-10 percentage units higher than normal corn silage.

Research has shown that a 1% unit increase in forage NDFD results in 0.37 lbs more dry matter intake, resulting in 0.55 lb/cow/day more milk. University studies have consistently shown increased intake levels with BMR corn silage of 3 - 5 lbs dm/day. Reviewed research results vary, but milk production is typically improved by 3.5 - 6 lbs/day. The increased milk/day appears to be a result of increased dry matter intake, rather than higher energy content (NE_L). Higher intakes should enable fresh cows to maintain weight better and get back in calf sooner. Higher fibre digestibility

enables increasing the amount of corn silage in the ration and reducing the amount of grain corn without adverse effects.

Because of the higher fibre digestibility of BMR, it is more advantageous to target it to classes of livestock where intakes are limited by physical fill. In large herds feeding TMR to groups these priorities would be close-up dry cows, fresh cows and first-calvers, and high producing dairy cows.

Lab Analysis
When sending BMR silage samples to a laboratory for analysis, use starch, NDF, and an in vitro NDFD to estimate energy, not the old method of estimating energy from ADF and NDF levels. The cheaper NIR analysis may require more calibration before we can accurately predict NDFD in BMR hybrids. BMR corn silage may have lower starch levels, offsetting the higher NDFD contributions to NE_L (mcal/kg).

Ration Balancing
Work closely with your nutritionist in ration formulation when feeding BMR corn silage. Because of its dramatically higher fibre digestibility, BMR silage behaves very differently in a ration. If you feed BMR silage the same way you would normal silage in a high grain ration, problems will result. Mycogen recommends feeding a minimum of 40 - 45 lbs/cow/day BMR silage (as fed). Higher fibre levels are required to maintain optimal rumen function and pH. Increase NDF and decrease grain levels in the ration to avoid acidosis. Provide adequate physically effective NDF. Do not include BMR in high grain diets. Mycogen also recommends a minimum forage to concentrate ratio of 55:45, and a minimum dietary NDF of 30%, or 32% where BMR is more than 50% of the forage dry matter.

Agronomics
In the past, we have typically seen a 10% yield drag with BMR corn. Lower yields (up to 20%) have been observed during seasons with more stress under marginal environmental conditions. However, there have been continued improvements in breeding. The fourth-generation hybrids now available are much improved over the original BMR hybrids commercialized over a dozen years ago, with better drought tolerance, disease resistance, and standability. Bt and RR traits are being incorporated. Mycogen claims they have narrowed the gap to a 5% yield drag. Ontario needs more independent silage yield data to evaluate these hybrids.

Harvesting
BMR cell walls are more fragile, so it is more prone to seepage and packs tighter. Harvest BMR silage slightly drier (2%) than normal silage. A longer theoretical length of cut (TLC) is necessary to maintain physically effective fibre, especially if using a kernel processor. Without a processor, a TLC of ¾ - 1 inch is recommended in a horizontal silo, and 5/8 - ¾ inch in a tower silo. With a processor, the TLC should be 1 - 1.5 inch in a horizontal silo, and ¾ to 1 inch in a tower silo. Avoid storage of BMR silage in bottom unloading silos. Using the milk-line to estimate moisture at harvest is not accurate. Moistures are best estimated by chopping a sample and using a Koster Tester, microwave or laboratory analysis.

Economics
There are some increased costs associated with BMR in addition to substantially higher seed costs. BMR corn silage produces more milk/ton, but not more milk/acre. Because of the lower yields and higher intakes, more corn silage acres will be required. This will partially be offset by fewer grain corn acres. What is the cost and availability of land rental in your area? BMR is most profitable when fed to close-up, fresh and high yield groups, and much less profitable if fed to the whole herd. What is the size of your dairy herd and can BMR be practically fed to specific groups?

Dairy producers should weigh the nutritional benefits against the agronomic costs associated with BMR hybrids to determine whether BMR has a place on their operations. Perhaps the most obvious situation where BMR may have an advantage would be in high corn silage diets. BMR is of interest to some milk producers in the Ottawa Valley, where there is a higher risk of alfalfa winterkill and more desire to increase the percentage of corn silage in the ration.

Research Profile: Grassy Weed Control in Grain Sorghum

by Mike Cowbrough, OMAFRA – Guelph

Overview: Grain sorghum is being considered as an alternative grain crop for ethanol and feed, particularly in geographic areas that are more susceptible to dry soil conditions or whereby it is difficult to cultivate land early in the spring. Achieving good control of grassy weeds has been identified by producers as a significant management challenge that must be addressed in order for the crop to be economically sustainable.

Technical Background: Prowl and Dual II Magnum have been identified as two potential herbicides for management of grassy weeds in grain sorghum. A registration submission under the Minor Use Program of the Pest Management Regulatory Agency (PMRA) is being investigated. Historically, crop injury with both products has been a concern, especially when applied preemergent and then followed by excessive precipitation. The proposed use guidelines would dictate that both Prowl and Dual II Magnum be applied post-emergent to the grain sorghum crop but before any grassy weeds have emerged, as both products do not control emerged annual grasses. Furthermore, Dual II Magnum would be applied at a reduced rate for suppression only of grassy weeds.

Research Objectives:

- To evaluate grassy weed control with Prowl and with a reduced rate of Dual II Magnum at various application timings.
- To identify the most effective application timings for each herbicide program.
- To explore opportunities for improved grassy weed control in grain sorghum.

Key Learnings from 2007 trials:

- In the absence of adequate rainfall, the reduced rate of Dual II Magnum provided poor weed control regardless of application timing.
- Prowl applied at the 2-3 leaf stage of grain sorghum provided adequate grassy weed control (Figure 1).
- Prowl applied at the 4-5 leaf stage of grain sorghum provided poor grassy weed control (Figure 2).
- A pre-plant application of glyphosate to remove any emerged grassy weeds, followed by an application of Prowl at the 2-3 leaf stage of grain sorghum provided the best level of grassy weed control (Figure 3).

Future Research:

- Evaluate other potential grassy weed herbicides.
- Evaluate seed applied herbicide safeners.

Contributors:

Dr. François Tardif and Peter Smith (University of Guelph)

Figure 1

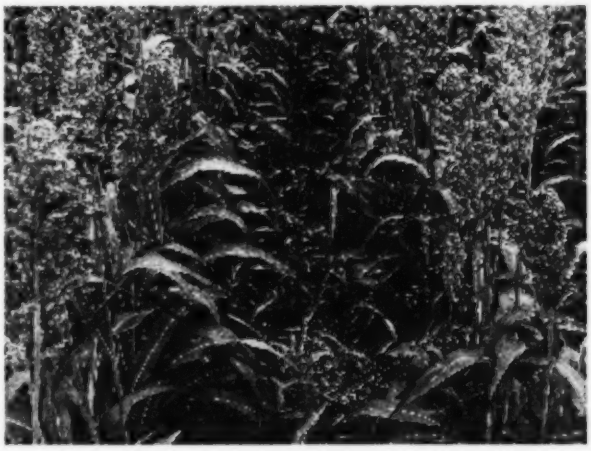

Figure 2

Figure 3

Table 1 - Ontario Performance Trial; Winter Wheat 2007; Cumulative Yield Index[1] Summary for Area I & II Combined[2] OCCC August, 2007.

Variety	Class[3]	5 year	4 year	3 year	2 year	2007
Superior	sww	101[4]	100	100	100	103
AC Mackinnon	sww	103	102	103	105	103
AC Mountain	sww	100	99	100	101	101
Ashley	sww-a	101	100	99	100	97
25W41	sww-a		99	99	100	106
D8006W	sww-a		102	102	103	107
Ava	sww				104	106
E1009W	sww				106	105
FT Action	sww					90
Wisdom	srw	101	100	101	101	101
Warwick	srw	100	99	98	99	98
Vienna	srw	103	102	99	94	97
FT Wonder	srw	99	99	98	96	95
25R47	srw-a	111	109	109	107	112
Tribute	srw		103	103	102	101
Emmit	srw		110	110	110	110
E1007R	srw-a			105	106	104
R045	srw-a			101	102	106
Huntley	srw-a			102	100	100
Becher	srw				103	103
ADV Dyno	srw				102	106
R055	srw				104	103
25R56	srw				109	113
25R51	srw					103
AC Morley	hrw	98	97	95	97	98
Maxine	hrw-a	94	92	91	89	85
Warthog	hrw	97	97	96	99	96
Harvard	hrw	99	98	96	96	96
Carlisle	hrw-a	98	97	97	95	94
AC Sampson	hrw	96	96	94	93	91
Wentworth	hrw				100	97
FTHP Redeemer	hrw				88	88
Means		6.31	6.26	6.14	6.16	5.73
No. of locations		31	25	18	11	5

[1] Indexed for each site and then averaged, index = 100 x (variety yield/site yield). Values differing by less than 3 within a column may not represent true differences in yield.

[2] Area I & II Combined = all heat unit zones West of Frontenac County

[3] sww = soft white winter, srw = soft red winter, hrw = hard red winter, a = awned

[4] Cultivar yield rankings may vary from year to year. Decisions are therefore best made using data with the greatest number of years.

NOTE: All areas of the Performance Trials are available on the website at:
http://www.omafra.gov.on.ca/english/crops/facts/wwperf-07.htm ***Printable copy: wwperf-07.pdf***

Copies are available at your local OMAFRA office or by calling the Contact Centre @ 1-877-424-1300.

Table 4 - Ontario Performance Trial; Winter Wheat 2007 – Cumulative Yield Index[1] Summary for Area III[2], OCCC, August 2007.

Variety	Class[3]	5 year	4 year	2 year	2007
Superior	sww	105[4]	106	105	107
AC Mackinnon	sww	103	105	107	106
AC Mountain	sww	106	108	110	111
Ashley	sww-a	100	99	99	105
25W41	sww-a		94	98	101
D8006W	sww-a		97	97	96
Ava	sww			106	104
E1009W	sww			100	98
FT Action	sww				90
Wisdom	srw	100	100	101	102
Warwick	srw	93	93	94	96
Vienna	srw	103	99	97	90
FT Wonder	srw	97	97	97	102
25R47	srw-a	112	109	111	114
Tribute	srw		90	88	94
Emmit	srw		111	112	109
E1007R	srw-a			109	110
R045	srw-a			98	103
Huntley	srw-a			93	92
Becher	srw			99	96
ADV Dyno	srw			110	110
R055	srw			95	94
25R56	srw			109	100
25R51	srw				101
AC Morley	hrw	97	101	102	104
Maxine	hrw-a	89	91	88	87
Warthog	hrw	99	100	100	100
Harvard	hrw	101	101	100	99
Carlisle	hrw-a	96	95	94	97
AC Sampson	hrw	100	102	100	101
Wentworth	hrw			100	92
FTHP Redeemer	hrw			88	91
Means		5.66	5.35	5.49	4.89
No. of locations		9	7	5	3

[1] Indexed for each site and then averaged, index = 100 x (variety yield/site yield). Values differing by less than 3 within a column may not represent true differences in yield.

[2] Area III = East of Frontenac County.

[3] sww = soft white winter, srw = soft red winter, hrw = hard red winter, a = awned

[4] Cultivar yield rankings may vary from year to year. Decisions are therefore best made using data with the greatest number of years.

All Area III trials lost in 2005, thus no 3 year averages to report

Table 5 - Ontario Winter Wheat Varietal Characteristics Based on Data From Across Ontario 2007 OCCC, August 2007

Variety	Test Weight (kg/hl)	TKW (g)	Winter Survival (%)	Lodging (0-9)[1]	Height (cm)	Heading Date[2] (JD)	Powdery Mildew (0–9)[1]	Leaf Rust (0–9)[1]	Leaf Septoria (0–9)[1]	BYDV (0-9)[1]	Fusarium Rating[4]	Years (Fusarium Data)
Superior	74.4	39.4	91	2.0	90	157	0.9	2.2	2.3	1.3	S	6
AC Mackinnon	75.2	37.0	95	1.8	88	155	0.8	2.7	2.3	1.0	HS	6
AC Mountain	73.9	39.1	94	2.0	93	156	1.4	2.3	2.8	1.2	S	6
Ashley	74.3	42.2	92	1.3	89	158	0.3	1.5	2.2	0.4	MS	4
25W41	76.9	35.1	92	1.0	73	155	2.4	1.0	1.6	0.7	S	4
D8006W	75.5	43.3	94	1.3	81	154	0.7	2.3	2.1	0.9	HS	4
Ava	75.7	36.2	89	1.8	88	157	1.8	1.7	2.5	1.5	MR	2
E1009W	76.9	38.0	89	1.5	75	156	0.9	2.5	2.4	1.1	S	2
FT Action	74.0	40.1	89	1.5	94	158	0.9	1.6	2.5	1.4	MR	1
Wisdom	76.2	36.9	94	2.0	83	154	1.8	1.7	2.8	1.0	MR	6
Warwick	75.8	39.4	92	2.5	84	154	1.0	0.4	2.5	1.2	MS	6
Vienna	75.6	32.4	91	2.3	83	155	0.5	5.3	3.2	2.0	MR	6
FT Wonder	77.1	41.3	94	2.5	83	154	1.6	4.2	3.2	1.3	MR	6
25R47	75.1	37.2	94	1.5	73	154	1.6	0.7	1.9	0.6	S	5
Tribute	78.4	39.0	88	2.0	69	154	0.4	0.9	2.2	0.8	MS	4
Emmit	76.9	38.5	95	1.5	80	155	1.8	3.1	2.6	1.3	MS	4
E1007R	77.4	38.6	95	1.0	77	154	0.8	2.0	2.1	1.1	S	3
R045	77.2	37.0	92	1.3	76	154	1.1	0.9	2.9	1.1	S	3
Huntley	77.9	41.3	90	2.5	86	153	0.6	1.4	1.7	0.7	S	2
Becher	76.7	39.5	94	1.5	87	156	0.8	0.4	2.4	0.7	HS	2
ADV Dyno	73.9	39.4	92	1.5	84	158	1.1	2.6	3.3	1.0	MR	2
R055	76.4	35.5	95	2.3	76	155	1.0	0.9	2.4	1.1	HS	2
25R56	75.2	33.1	93	1.5	73	155	1.4	0.7	1.9	0.5	HS	2
25R51	75.0	35.4	95	1.3	75	153	2.1	1.6	2.8	0.7	MR	1
AC Morley	77.2	38.7	94	2.3	103	156	0.6	0.4	2.4	1.3	MR	6
Maxine	78.0	42.9	90	2.3	80	155	1.5	2.4	3.0	1.4	HS	6
Warthog	77.7	37.8	94	1.3	87	157	1.2	0.7	2.8	2.0	MS	6
Harvard	77.4	44.1	93	1.8	86	155	1.4	3.0	3.0	1.7	S	6
Carlisle	79.1	48.0	94	1.8	76	154	1.0	4.0	2.8	1.9	MS	6
AC Sampson	74.8	39.9	93	2.0	86	159	0.6	2.9	2.5	1.1	HS	6
Wentworth	77.6	46.3	95	1.8	90	156	1.4	0.7	2.5	1.5	HS	2
FTHP Redeemer	78.0	42.9	94	1.3	89	156	1.7	0.4	2.8	1.5	MR	2
Means	**76.3**	**39.2**	**93**	**1.8**	**83**	**155**	**1.1**	**1.9**	**2.5**	**1.2**		
No. of locations	**8**	**8**	**7**	**1**	**7**	**6**	**4**	**3**	**3**	**3**		

[1] For ratings 0-9, a high score is undesirable.

[2] Heading may vary from year to year and should only be used to indicatie relative differences.

[4] Fusarium ratings are based on Fusarium head blight ratings and deoxynivalenol (DON) levels from inoculated provincial trials. MR=moderately resistant (best); MS=moderately susceptible; S=susceptible; HS=highly susceptible (worst)